

**IEEE P802.15
Wireless Personal Area Networks**

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)		
Title	Additional Interference Scenarios		
Date Submitted	[August 10, 2001]		
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Re:			
Abstract	[Three additional interference scenarios are defined in order to quantify the impact of interference on Bluetooth and IEEE 802.11 devices operating in the same environment]		
Purpose	[The intention is to stimulate discussion and reach consensus in TG2 on the interference scenarios to be included in the Recommended Practice document.]		
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Release	The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15.		

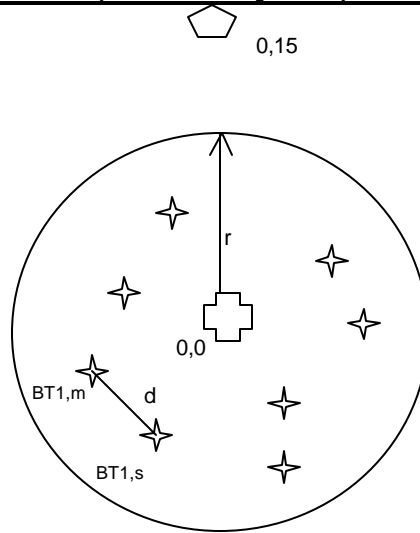
Case 1: Conference Hall Scenario, 1 WLAN System, 10 BT piconets

Figure 1: Conference Hall Topology

	Bluetooth	IEEE 802.11b
Traffic	Fixed size packet, exponential interarrivals	Fixed size packet, exponential interarrivals
Baseband Packet generation	DM1 (Slave to master and master to slave)	Packet = 8000 bits (including MAC Header) ACK = 112 bits
Offered Load	30% of capacity	30% of capacity
Interarrival mean		
Placement: (x, y) coordinates in meters	10 BT masters randomly distributed within a circle of radius r ; BT slaves have a distance from their respective masters equal to d . d varies between 0.5 and 2 meters; r varies between 3 and 10 meters	WLAN Source: (0,15) m WLAN AP: (0,0) m
Number of devices	10 pairs	2 devices (1 AP, 1 STA)
Bluetooth (MAC) Parameters		
Mode of Operation	Connection	Connection
Other Parameters		
Data Rate (Mbps)	1 Mbit/s	1) Direct Sequence Spread Spectrum at 11, and 1 Mbits/s 2) Frequency Hopping at 1 Mbits/s
General Simulation Parameters		
Processing delay (at transmitter and receiver)	0 ms	0 ms

including segmentation and reassembly)		
Length of Simulation Run	30 seconds	30 seconds
Length of Run Prior to Gathering Statistics	5% of simulated time	5% of simulated time

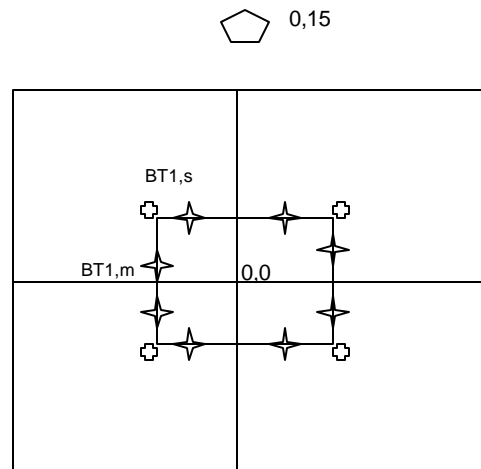
Case 2: Cubicle Scenario, 1 WLAN System, 4 BT piconets

Figure 2: Cubicle Topology

	Bluetooth	IEEE 802.11b
Traffic	Fixed size packet, exponential interarrivals	Fixed size packet, exponential interarrivals
Baseband Packet generation	DM1 (Slave to master and master to slave)	Packet = 8000 bits (including MAC Header) ACK = 112 bits
Offered Load	30% of capacity	30% of capacity
Interarrival mean		
Placement: (x, y) coordinates in meters	4 BT masters at (-1,0.5), (1,0.5), (-1,-0.5) and (1,-0.5) meters and the 4 corresponding BT slaves at (-0.5, 1), (0.5,1), (-0.5,-1), and (0.5,-1).	WLAN Source: (0,15) m 4 WLAN AP: (-1,-1)m, (1,1)m, (-1,1)m, (1,-1)m
Number of devices	4 pairs	5 (1 AP , 4 STA)
Bluetooth (MAC) Parameters		
Mode of Operation	Connection	Connection
Other Parameters		
Data Rate (Mbps)	1 Mbit/s	1) Direct Sequence Spread Spectrum at 11, and 1 Mbits/s 2) Frequency Hopping at 1 Mbits/s
General Simulation		

Parameters		
Processing delay (at transmitter and receiver including segmentation and reassembly)	0 ms	0 ms
Length of Simulation Run	30 seconds	30 seconds
Length of Run Prior to Gathering Statistics	5% of simulated time	5% of simulated time

Case 3: Factory/ Office Environment Scenario, 3 WLAN Systems, 1 BT piconets

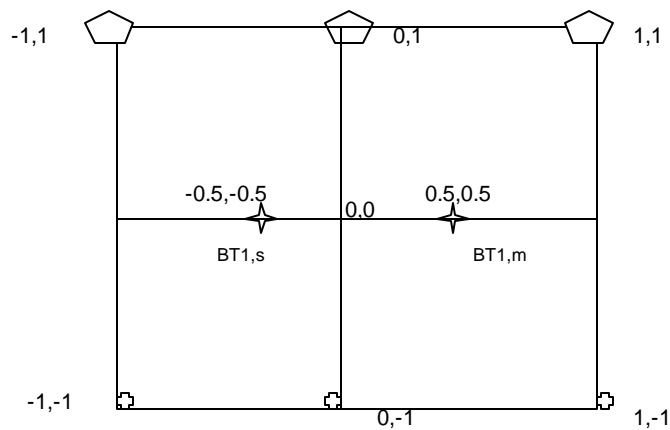


Figure 3: Office Environment

	Bluetooth	IEEE 802.11b
Traffic	Fixed size packet, exponential interarrivals	Fixed size packet, exponential interarrivals
Baseband Packet generation	DM1 (Slave to master and master to slave)	Packet = 8002 bits (including MAC Header) ACK = 112 bits
Offered Load	30% of capacity	30% of capacity
Interarrival mean		
Placement: (x, y) coordinates in meters	1 BT master at (0.5,0.5), and its BT slave at (-0.5, -0.5).	WLAN Sources: (-1,-1), (0,-1), (1,-1) and 1 WLAN AP at (1,1), (0,1) and (1,1).
Number of devices	1 pair	6 (3 AP , 3 STA)
Bluetooth (MAC) Parameters		
Mode of Operation	Connection	Connection
Other Parameters		
Data Rate (Mbps)	1 Mbit/s	1) Direct Sequence Spread Spectrum at 11, and 1 Mbits/s – Each AP/Source

		pair is on a different center channel (non-overlapping bands) 2) Frequency Hopping at 1 Mbits/s
General Simulation Parameters		
Processing delay (at transmitter and receiver including segmentation and reassembly)	0 ms	0 ms
Length of Simulation Run	30 seconds	30 seconds
Length of Run Prior to Gathering Statistics	5% of simulated time	5% of simulated time